

## SECTION 07 5050

### MEMBRANE ROOFING GENERAL PROVISIONS

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#### LANL MASTER SPECIFICATION

When editing to suit project, author shall add job-specific requirements and delete only those portions that in no way apply to the activity (e.g., a component that does not apply). To seek a variance from applicable requirements, contact the ESM Architectural POC.

When assembling a specification package, include applicable specifications from all Divisions, especially Division 1, General Requirements.

Delete information within "stars" during editing.

Specification developed for ML-3 projects. For ML-1 / ML-2, additional requirements and QA reviews are required.

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#### PART 1 GENERAL

##### 1.1 SECTION INCLUDES

- A. Roofing General Provisions for use with Section [07 5316, Chlorosulfonate Polyethylene Roofing (Hypalon)] [075216, Styrene-Butadiene-Styrene Modified Bituminous Membrane Roofing (SBS)].

##### 1.2 PERFORMANCE REQUIREMENTS

- A. Underwriters Laboratories, Inc (UL): Class A Fire Hazard Classification.
- B. Factory Mutual Engineering & Research Corporation (FM): Roof Assembly Classification Class 1 Construction, wind uplift classification of 1-90, in accordance with FM Loss Prevention Data Sheet 1-28.
- C. International Building Code – IBC
- D. NRCA Roofing and Waterproofing Manual (current edition) or membrane manufacturer's details.

##### 1.3 SUBMITTALS

- A. Submit the following in accordance with Section 01 3300, Submittals:
  - 1. Catalog Data: Include materials to be incorporated into roof system that will be supplied by primary roofing materials manufacturer. These include, but are not limited to the following:
    - a. Sheet materials, mastics, sealants, adhesives, or mechanical fasteners.

- b. Metal work (profiles) including termination bars, edge flashing, roof edges, expansion joints, and reglets.
  - c. Drain type to be used (regardless of new or retrofit construction).
  - d. Fire classification compliance data specified.
  - e. Wind uplift resistance data specified including fastening pattern.
  - f. 12 inch by 12 inch sample of each ply sheet material installed.
  - g. Vapor retarder sample if specified.
  - h. Sample of roof insulation types used.
  - i. Sample of flashing material.
  - j. One each of fasteners used.
  - k. Product Data Sheets on all products.
  - l. Material Safety Data Sheets on all materials used.
- 3. Installation Instructions: Manufacturer's special application, or handling precautions.
  - 4. Retrofit Shop Drawings: Indicate roof configuration and sheet materials field layout, details at perimeter, terminations, overlaps, penetrations, equipment supports, pipe and duct supports, metal edge work, coping, etc., as applicable.
  - 5. Warranty: As specified herein.
  - 6. Water Intrusion Plan: As specified herein.
  - 7. Qualifications: Membrane manufacturer and Applicator qualifications as specified herein.

#### 1.4 WARRANTY

- A. Upon completion of the work and receipt of final payment, the manufacturer shall submit executed copy of roofing manufacturer's standard limited service warranty agreement including flashing endorsement, signed by an authorized representative of the roofing system manufacturer, for [5] [10] [ ] years after date of substantial completion.
- B. Roofing Contractor shall supply LANL with a minimum two (2) year workmanship warranty. In the event any work related to roofing, flashing, or metalwork is found to be defective or otherwise not in accordance with the Contract Documents within two (2) years of final acceptance, the Roofing Contractor shall remove and replace the defects at no cost to LANL.

## 1.5 QUALIFICATIONS

### A. MEMBRANE MANUFACTURER

1. Company specializing in manufacturing products specified in this section.
2. Supply a list of projects, completed in the Southwest United States, where specified membrane has been in place and performing successfully for a period of not less than 5 years. A minimum of 500 roofing squares of total combined projects of [CSPE] [SBS] membrane shall have been installed to meet this requirement.
3. Manufacturer shall supply membrane application training and certification to LANL's Support Services Subcontractor if necessary but in any case shall guarantee that emergency repair will not affect ongoing warranty.
4. Membrane manufacturer or authorized representative shall oversee the first 3 days of membrane installation.

### B. APPLICATOR

1. Company specializing in performing the Work of this section with documented experience and certified or eligible for certification by membrane manufacturer as an applicator and maintenance company. As a minimum, Applicator shall have successfully completed 5 projects using the specified or similar materials. Applicator shall provide LANL's Contract Administrator with a written record identifying these projects with the name and address of purchasers of the service and location of work performed, if requested.
  - a. Applicator shall have completed a minimum of 250 roofing squares of [CSPE] [SBS] membrane in the Southwest United States. To qualify for this requirement, the completed membrane shall have met all conditions to obtain material warranty and must be performing successfully.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with Section 01 6000, Product Requirements.
- B. Store ply sheets on ends where possible; on sloped roofs, store flat parallel to joists.
- C. Remove and dispose of damaged materials including moisture damaged materials. Discard rolls of roofing materials that have been flattened, creased, or otherwise damaged.
- D. Take care during application and storage that overloading of deck or structure does not occur.

## 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply roofing materials during inclement weather.

- B. Do not apply roofing materials to damp or frozen surfaces.
- C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed during same day or prior to the arrival of inclement weather.
- D. Secure construction materials, including equipment and accessories, against wind blow-off damage.
- E. Should surface moisture occur, provide necessary equipment and labor to dry surface prior to application.

## 1.8 JOB CONDITIONS

- A. Contractor shall ascertain to his satisfaction, and coordinate with others, that specifications and drawings are workable and that they are not in conflict with manufacturer's requirements for a material warranty.
- B. Do not allow contaminants, such as grease, fats, oils, and solvents to come into direct contact with roofing membrane. Present any exposures to membrane manufacturer for assessment of impact on roof system performance.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine substrate surfaces to receive sheet roofing system and associated work, and conditions under which roofing will be installed. Do not proceed with roofing until unsatisfactory conditions have been corrected to the satisfaction of the University Technical Representative (UTR) as represented by the LANL Construction Inspector.
- B. Prior to all Work of this section, carefully inspect installed work of other trades and verify that such Work is complete to the point where installation may properly commence.
- C. Verify that Work of other trades that penetrate the roof deck has been completed.
- D. Verify that roofing system may be installed in accordance with pertinent codes and regulations, contract documents, and manufacturer's recommendations.
- E. In the event of discrepancy, immediately notify LANL Construction Inspector. Do not proceed with installation in areas of discrepancy until discrepancies have been resolved to the satisfaction of the UTR as represented by the LANL.

### 3.2 PREPARATION OF SUBSTRATE

- A. Comply with insulation and membrane manufacturer's instructions for preparation of substrate to receive roofing system.
- B. Clean substrate of dust, debris and other substances detrimental to system work. Remove sharp projections.
- C. Notify LANL Construction Inspector to inspect substrate after preparation. Do not proceed with installation until UTR as represented by the LANL Construction Inspector has approved substrate.

### 3.3 GENERAL INSTALLATION

- A. Comply with membrane manufacturer's standard details where Contract documents do not provide details.
- B. Plug roof drains before starting work each day and unplug drains during rain and at end of each workday.
- C. Install appropriate edge termination. Provide roof membrane manufacturer approved bedded-in roof membrane mastic over 1/3 course base sheet or layer of single ply membrane (SBS).]
- D. Provide plywood or equivalent protection for previously applied or existing roof areas that receive traffic during construction.
- E. Prior to and during application, remove dirt, debris and dust from surfaces either by sweeping or vacuuming. Compressed air cleaning is prohibited.
- F. Coordinate with lightning system installer to ensure roof membrane and all components, fasteners and adhesives are acceptable with roof membrane manufacturer.

### 3.4 INSTALLATION OF MEMBRANE

- A. Install membrane per membrane manufacturer's written installation procedures for an approved fully adhered system.
- B. Inspect surface of separation board prior to installation of roof membrane. Surface shall be clean and smooth with no excessive surface roughness, contaminated surfaces, or unsound surfaces such as broken or delaminated boards.

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#### "3.4C" APPLIES TO CSPE "HYPALON" MEMBRANE ROOFING

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- C. Do not apply bonding adhesive to lap areas that are to be welded to flashing or adjacent sheets. Apply sheets in same manner, lapping as required by welding techniques.

### 3.5 RETROFIT INSTALLATION

- A. Install required new or retrofit roof drains.
- B. Remove existing lightning protection system and replace with new material in accordance with Section 26 4100, Facility Lightning Protection System (qualified installer, etc.). Return existing air terminals to LANL.
- C. When applicable, remove and dispose of existing roofing and flashings, as specified and in compliance with Section 07 0150.19, Preparation for Re-Roofing. Dispose of all construction debris in the Los Alamos County Land Fill, or other authorized disposal site at bidder's expense. The Los Alamos County Land Fill will not accept any asbestos laden materials, including non-friable materials.
- D. Install temporary water stops at the end of each day's work and remove them before proceeding with the next day's work. Water stops shall be compatible with all materials, shall not emit dangerous or incompatible fumes, and shall be installed per manufacturer's recommendations.
- E. Provide necessary protection and barriers to segregate work area and to prevent damage to adjacent areas.

### 3.6 DRAIN TESTING

- A. Water test roof drains per LANL Construction Inspector's direction prior to and upon completion of roofing work to insure that no blockage exists or has occurred. If blockage occurs prior to work starting the clearing of the obstruction will be the responsibility of LANL.

### 3.7 WATER INTRUSION PLAN (INCLEMENT WEATHER REQUIREMENTS)

- A. Submit a WATER INTRUSION PLAN for approval at least 5 working days before construction starts.
  - 1. Roof Removal and Re-Roof Plan (retrofit only):

Submit roof plan indicating locations of and total amounts of roofing materials to be removed and replaced daily. Indicate how existing roof will be protected from traffic and/or equipment to remain weather tight. Also indicate method to seal tie-in joints between the old roof and the newly installed roofing materials.
  - 2. Imminent Inclement Weather Rapid Response Plan:

Submit written plan indicating how roofing materials and building contents will be protected from water damage if rain appears imminent (rain may start 15-30 minutes from the time that the first dark clouds appear from behind the mountains).
  - 3. Locate materials identified within the Water Intrusion Plan on site before any roof work is begun.

### 3.8 ROOF WALKWAYS

- A. Comply with Section 07 7600, Roof Pavers.
- B. Install walkways at location shown in Contract documents.

### 3.9 TEMPORARY CUTOFF

- A. Install flashing concurrently with roof membrane in order to maintain watertight condition as the work progresses. When a break in the day's work occurs in central area of roof, construct temporary water stop to provide 100 percent watertight seal. Install water stop per manufacturer's recommendations unless otherwise specified in Contract documents. When work on new system is suspended, maintain the stagger of insulation joints by installing partial fillers. Carry new membrane into water stop. When Work resumes, remove contaminated membrane, insulation fillers, etc., from work area and dispose of material off-site. Do not reapply used materials.
- B. If inclement weather occurs while a temporary water stop is in place, provide the labor necessary to monitor the situation to maintain a watertight condition.

### 3.10 COMPLETION

- A. Prior to demobilization from site, LANL Construction Inspector and Contractor will review Work. All defects or non-compliance with these specifications or the recommendations of the membrane manufacturer shall be itemized in a punch list. These items must be corrected immediately by Contractor prior to demobilization to the satisfaction of LANL Construction Inspector and membrane manufacturer.
- B. Complete site clean up, including interior and exterior of building, of areas below or adjacent to or in any way affected by construction of roof. Use cleaners approved by roof membrane manufacturer and LANL Construction Inspector. Notify LANL Construction Inspector before using any solvent or cleaner to allow intake fans to be shut down. Cleaning with gasoline is prohibited.
- C. Paint to match, or repair any damage to LANL Facilities caused by the construction activities.

### END OF SECTION

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Do not delete the following reference information:

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### FOR LANL USE ONLY

This project specification is based on LANL Master Specification 07 5050 Rev 0, dated January 6, 2006.